REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and the following remarks. Claims 15-40 are withdrawn. Claims 6-8, 12, 41-63, 65, and 66 are canceled. Claims 1-5, 9-11, 13-40, 64, 67 and 68-69 are pending. Claims 1, 64, and 68 are independent. Amendments herein do not necessarily narrow claim scope and are not necessarily made for patentability reasons.

Indication of Non-Responsive Amendment of October 24, 2007

An Office communication mailed January 7, 2008, indicated that the amendment filed on October 24, 2007, was nonresponsive because it presented only claims drawn to a non-elected invention (Group II). Applicants now present the current amendment, which uses different claim language and clearly distinguishes from Group II.

Group II was indicated in the Restriction Requirement mailed January 4, 2005, as:

> A computer-readable medium comprising computer-executable instructions for projecting possible fluorescent image components within a stack of image slices generated from a plurality of confocal microscopic observations of a FISH experiment, discarding insignificant contiguous fluorescent image components, grouping specific regions into spot candidates, applying a filter to spot candidates and counting the remaining candidates as spots.

The related claim 58 (now canceled) recited, "projecting the possible fluorescent image components within the image slices onto a projection image." For example, the Application describes at Page 25, lines 3 et seq.:

> At 1304, the resulting pixels in each slice are projected onto a projection image. For example, a binary projection image can be constructed from a stack of binary images by setting pixels in the binary projection image at locations (X,Y) whenever there is any pixel set in any of the stack of binary images at the same (X,Y) location (regardless of the Z location).

The projecting technology is different from that recited in claim 1 (i.e., "combining, for the successive two-dimensional image slices, contiguous signal segments in successive optical sections into a single spot representing a single probe."). The projecting technology will cause a pixel to be set if it appears in any of the stack of binary images, irrespective of probes, unlike the recited arrangement, which combines *contiguous* signal segments . . . into a *single spot representing a single probe.*

The projection technology of Group II and claim 58 can be useful for determining to which areas the combining technique of claim 1 is to be applied (e.g., as described at page 25, lines 3 et seq. and illustrated in FIG. 13 of the Application), but is separate from the combining technology recited in claim 1 and does not distinguish spatially overlapping nucleic acid probe spots as recited in claim 1.

Accordingly, the claims distinguish over Group II.

Cited Art

The Action cites Kahn et al., Cytometry (1997) Vol. 28, pages 269-279, ("Kahn").

Claims Rejections 35 USC § 112

Applicants acknowledge withdrawal of the rejection of claims 1-5, 9-11, 13, 14, 64, and 67 under 35 U.S.C. § 112, second paragraph and believe that, in light of the current paper, prosecution has now advanced to a point where the claims are in condition for allowance.

Interview Summary

Applicants wish to thank the Examiner for his time during a telephonic interview on September 5, 2007. Claim 1 and Kahn was discussed. No specific agreement was reached, but the discussions helped advance prosecution.

Rejoinder

Applicants request rejoinder of the withdrawn species upon allowance of a generic claim. The dependent claims have been amended in light of amendments to claim 1.

Claims Rejections 35 USC § 102

Claims 1-5, 9-11, 13, 14, 34, 67, and 68 are rejected under 35 U.S.C. 102(b) as being anticipated by Kahn.

Kahn's description of factor images does not anticipate "combining, for the successive two-dimensional image slices, contiguous signal segments in successive optical sections into a single spot representing a single probe" as recited by claim 1. For example, the Application at page 4, line 16

describes:

> The remaining digital signal segments may then be analyzed to combine contiguous fluorescent signal segments in successive optical sections into a single spot signal

Further, Page 12, line 2 et seq. of the Application describes:

> In accordance with the present invention, the ratio of test probes (R) to reference probes (G) in the region of interest is the ratio that is calculated.

At page 277, Kahn describes:

> The second step, called oblique analysis, aims to estimate factors representing the fundamental curves. After the orthogonal analysis, each curve is a linear combination of the two or three first singular vectors; but these vectors have no physical meanings. Due to orthogonal conditions, they have both positive and genitive values and cannot be considered as extinction velocities, spectral curves, or depth emission profiles. Iterative algorithms have been proposed to find an appropriate solution, i.e., factors with physical meanings and positive weights of the curves on these factors (7, 1). The initial solution is directly determined from the set of experimental curves. Therefore, factors are estimated from the experimental data, as well as globally, and do not depend on spatial locations.

Thus, Kahn does describe "factors with physical meanings." However, as understood by Applicants, Kahn fails to describe "combining . . . contiguous signal segments in successive optical sections into a single spot" as recited by claim 1. Instead, Kahn makes use of factor images. Factors estimate different individual physical behaviors in a sequence (see Kahn at p 273, column 2). Kahn's FIG. 1C describes that factors correspond to depth emission profiles of the different fluorochromes, and factor images correspond to focal planes. However, Applicants do not find within Kahn where parts of factors are combined "into a single spot" as recited by claim 1.

Kahn's description of signals does not describe counting a number of ***spots*** *as recited by claim 1.* Applicants have amended claim 1 so that it recites "spots" rather than signals in various places. Support for the amendment is found throughout the application (e.g., "FISH spots" at page 5, line 27; "counting the spots" at page 13, line 29; "spot count results" at page 32, line 9; and the like).

The Action asserts that Kahn describes decomposition of a plurality of 2D image sequences and:

> Direct comparison of decomposed TO and FR distributions obtained from 2D images involves the determination of a ration of TI and FR intensities, which reads on determining a ratio of counted test signals from the test probe and counted reference signals from the reference probe.

The Action also asserts that, "Neither the instant claims nor the instant disclosure set forth a definition for 'determining a ratio for counted signals' that would exclude embodiments wherein a ratio of intensities is determined for said counted signals."

First, Applicants disagree that Kahn explicitly describes determining a ratio of intensities. However, in the interest of clarifying the claim, Applicants have amended it so that it now recites, "determining a ratio of the automatically-counted test **spots** from the test probe to the automatically-counted reference **spots** from the reference probe." Accordingly, the claim clearly distinguishes over Kahn, even if it were to describe a ratio of intensities.

For at least these reasons, claim 1 and its dependent claims, 2-5, 9-11, and 13-40, 67, and 69, are allowable over Kahn.

Similar language appears in claims 64 and 68, so these claims are also allowable.

New Claim 69

The application has been amended by adding claim 69, which recites:

> 69. The method of claim 1 further comprising:
> creating a stack of binary images for the two-dimensional image slices; and
> grouping binary spot markers occurring as vertical neighbors in the stack into a single spot representing a single probe.

For example, the Application described binary images and vertical neighbors at page 26, lines 14-25. In addition to the reasons given for claim 1, above, claim 69 is allowable over Kahn because Kahn fails to describe such an approach for grouping into a single spot representing a single probe.

Request for Interview

If any issues remain, the Examiner is formally requested to contact the undersigned attorney prior to issuance of the next Office Action in order to arrange a telephonic interview. It is believed that a brief discussion of the merits of the present application may expedite prosecution. Applicants submit the foregoing formal Amendment so that the Examiner may fully evaluate Applicants' position, thereby enabling the interview to be more focused.

This request is being submitted under MPEP § 713.01, which indicates that an interview may be arranged in advance by a written request.

Conclusion

The claims in their present form should now be allowable. Such action is respectfully requested.

Respectfully submitted,

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